

## CLAIMS

1. Coupling device for elevator car (5) and landing doors (13) of the kind comprising moving cams (3) integral with the car door (5) and driving the landing door (13) in front of a story landing by means of a coupling plate (11) integral therewith and engaging with the cams (3), locking it mechanically and electrically upon door closure to allow the subsequent drive of the car, characterized in that said cams (3) are movably mounted with a variable distance from each other on the car door (5), independently from the car door drive belt (19), and that it comprises a part (7) to drive the cams (3) with a variable distance, which is mounted on the car door (5) and connected to the drive belt (19) and to one of the cams (3), said part (7) exerting a lever action on said cam (3) to drive it towards and away from the other cam (3) with a large displacement relative to a small overtravel drive of the belt (19), in order to respectively allow to unlock the coupling plate (11) and its landing door (13) drive coupling when the doors open and to lock it when they close.

2. Coupling device as per claim 1, characterized in that said part (7) to drive the cams (3) apart is a connecting rod hinged on the car door support trolley panel (15) and hinged by an attachment tab (21) to the door drive belt (19) and to said driven cam (3).

3. Coupling device as per claim 2, characterized in that the ratio between the distance from the connecting rod (7) attachment point to the belt (19) on the hinging point of the connecting rod (7) on the trolley panel (15) and the distance from said connecting rod (7) hinge point to the attachment point on the cam (3) is largely lower than 1, varying according to the length of the connecting rod (7), and generally lower than  $1/3$ .

4. Coupling device as per claim 3, characterized in that said ratio of distances is equal to approximately  $7/30$ , so that a 7 mm overtravel of the belt (19) relative to the

opening or closure of the door drives the cams (3) towards or apart from each other, respectively, by an additional 30 mm.

5. Coupling device as per any of the preceding claims, characterized in that the opening position of the cams (3) unlocking mechanically and electrically the coupling plate (11) is advantageously locked in position with an appropriate distance between the cams (3) so as to maintain the plate (11) unlocked, by means of a locking element (9) that mechanically engages the cam drive connecting rod (7) or said driven cam (3) brought into its final drive position.

6. Coupling device as per claim 5, characterized in that the cam (3) opening position is locked in position by means of a final position stop (27) against the connecting rod (7) and of an associated hook element (29) with a self-snapping engagement, locking the connecting rod (7) in position, wherein these elements engage as soon as the car door drive belt (19) has been driven over a determined overtravel length as the doors open and close.

7. Coupling device as per any of the preceding claims, characterized in that the cams (3) are mounted movably with a variable distance from each other on the car door (5), by means of a set of two upper and lower connecting rods (17) hinged in a vertical parallelogram and connected to the car door (5) in their middle and to the cams (3) at their ends, wherein the displacement of the cam connected to the drive rod (7) is coordinated with the displacement of the corresponding terminal hinge point of the cam (3) drive connecting rod (7).

8. Coupling device as per any of the preceding claims, characterized in that the cam drive connecting rod (7) can be replaced by a set of two connecting rods hinged to each other, the first rod being hinged to the car door and connected to the drive belt and the second being linked to the driven cam, which makes cam (3) drive coordination easier.

9. Coupling device as per any of the preceding claims, characterized in that the landing door coupling plate (11) or

each rolling on each of the opposite upper sides of the cams (3), a catch picking element (47, 49) for the landing door (13) acting when the cams (3) come closer on door closure and released when the cams (3) move apart as the doors (5, 13) open, and an electrical landing door locking contact element (43, 45) operating in the same way as the catch picking element and closing the elevator car control circuit.

10. Elevator comprising a coupling device (1) for the car door (5) and the landing doors (13) as per any of the preceding claims.